USGS science for a changing world

Earthquake Shaking **Green** Alert

GSN USAID FROM THE AMERICAN PEOPLE ANSS

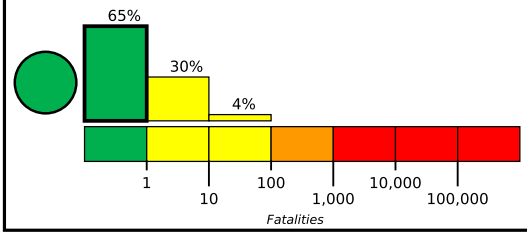
M 5.4, 28 km SSE of Madang, Papua New Guinea

Origin Time: 2023-11-09 20:53:46 UTC (Fri 06:53:46 local)
Location: 5.4497° S 145.9148° E Depth: 64.2 km

PAGER Version 3

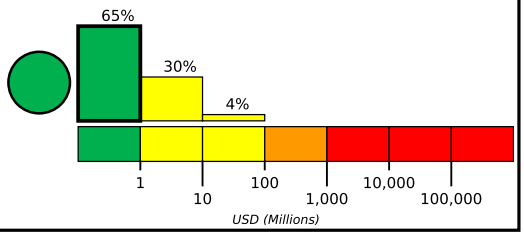
Created: 1 day, 0 hours after earthquake

Estimated Fatalities



Green alert for shaking-related fatalities and economic losses. There is a low likelihood of casualties and damage.

Estimated Economic Losses

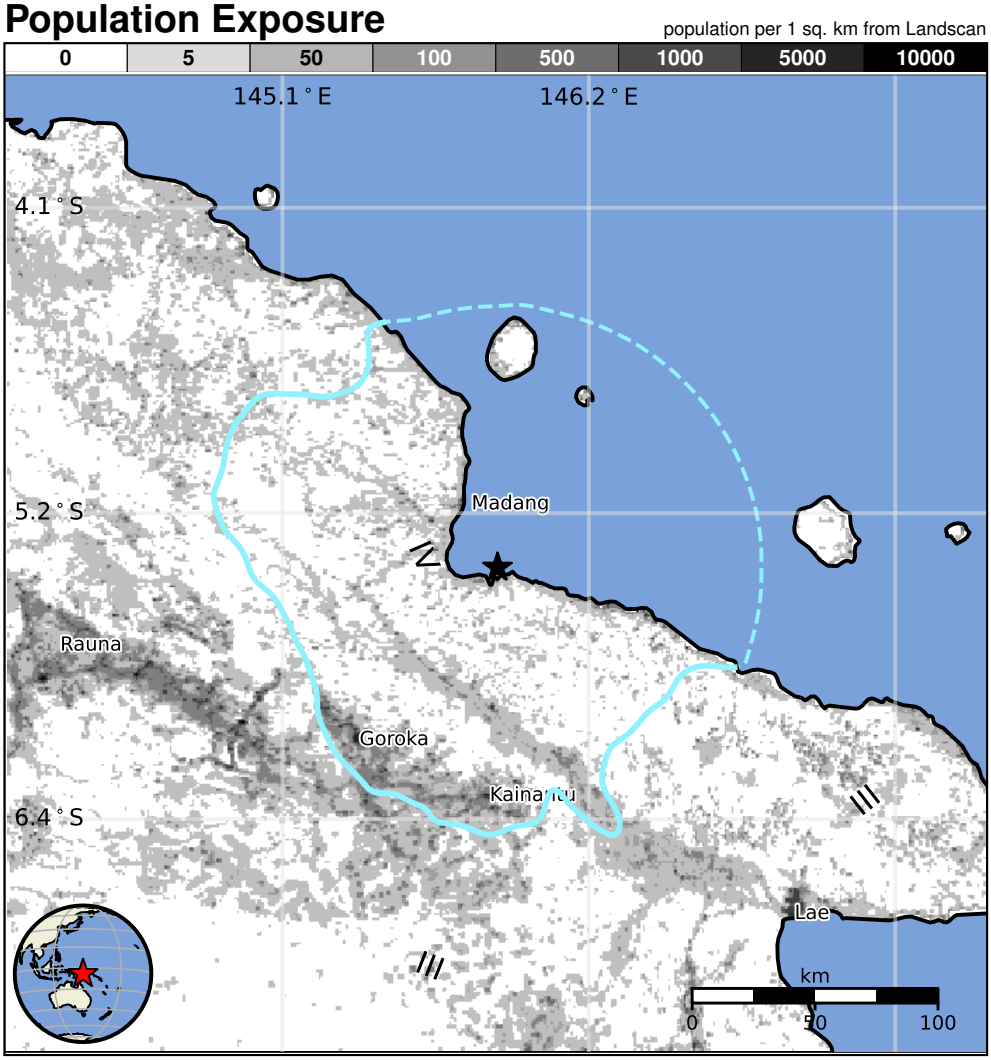


Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k=x1000)		–*	2,055k	835k	0	0	0	0	0	0
ESTIMATED MODIFIED MERCALLI INTENSITY		I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING		Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures	None	None	None	V. Light	Light	Moderate	Mod./Heavy	Heavy	V. Heavy
	Vulnerable Structures	None	None	None	Light	Moderate	Mod./Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area.

Population Exposure



Structures

Overall, the population in this region resides in structures that are a mix of vulnerable and earthquake resistant construction. The predominant vulnerable building types are informal (metal, timber, GI etc.) and unreinforced brick masonry construction.

Historical Earthquakes

Date (UTC)	Dist. (km)	Mag.	Max MMI(#)	Shaking Deaths
2005-06-04	141	6.1	VII(27k)	1
1993-08-20	350	6.1	VIII(13k)	0
1993-10-16	62	6.3	VII(75k)	3

Recent earthquakes in this area have caused secondary hazards such as landslides and liquefaction that might have contributed to losses.

Selected City Exposure

from GeoNames.org

MMI	City	Population
IV	**Madang**	**27k**
IV	**Kainantu**	**9k**
IV	**Goroka**	**19k**
III	Kundiawa	9k
III	Minj	<1k
III	**Lae**	**76k**
III	**Rauna**	**<1k**
III	Mount Hagen	34k
III	Bulolo	16k

bold cities appear on map. (k=x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.

https://earthquake.usgs.gov/earthquakes/eventpage/us7000l9xx#pager

Event ID: us7000l9xx